

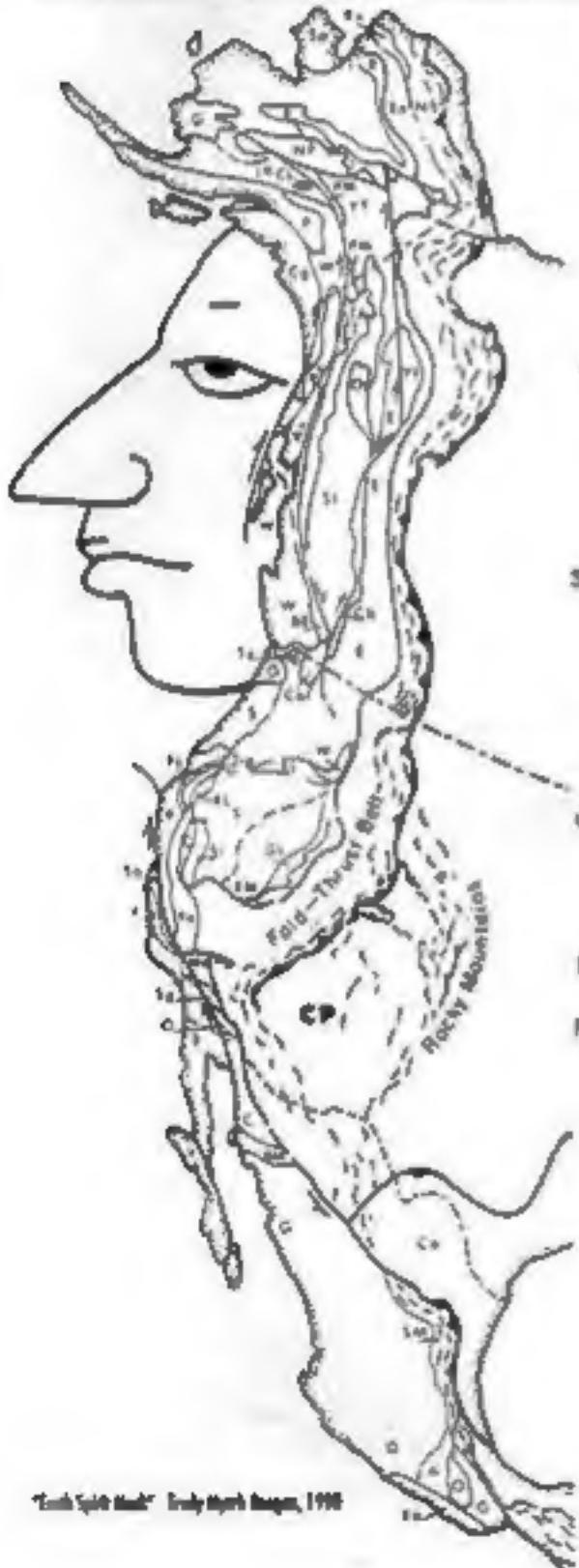
Artists Using Science and Technology

NEWSLETTER

PO Box 749, Orinda CA 94563

Vol.10, No. 3 April 1990

Ylem (Evelum): The primordial stuff out of which the universe emerged in the Big Bang.



March 13 Ylem Forum A Practice in Geosomatics

Tuesday, March 13, 8 pm, McRae Theatre, The Exploratorium, 3601 Lyon St., San Francisco
Admission (non-members) \$3

Geosomatics: An approach toward studying both the earth and our physical bodies in concert. A metaphoric play between myth, nature, self, form and pattern. (Geo: earth; soma: body)

Two areas of science that are currently studied as discrete systems are shifting dramatically toward an integrated view: earth systems and the physiology of the human body. This has inspired a practice of studying the two vast fields each within the context of the other. What are the systems we share, in our bodies, with the earth systems? How are we integrated within the cycles, processes and functions that are in perpetual motion within the atmospheric, geologic and oceanic systems of the earth?

David Hoffmeyer, California School of Herbal Studies, Forestville, CA
A sensitivity to life forms emerges from Hoffmeyer's work, as he shows slides of plants and discusses their properties and the spiritual, nutritive, and medicinal connection between plants and animals.

Susan Schreiber, medical technologist.
Schreiber shows how the use of vascular ultrasound and Doppler can diagnose the cause of strokes in the carotid arteries bringing blood to the brain. Comparison between blood flow and of water in rivers will also be made, based on fluid dynamics studies at NASA.

"The Crest of the East Pacific Rise" by poet Betty Rocek.
Rocek finds drama in geologic processes and eloquence in the terms that describe them. Her poem-like poem will be read by three voices to music.

Cellular Automata developed by Rudy Rucker, professor of mathematics, SJSU.
Describing an early computer diversion called the "Game of Life", the computer chip designed by Rucker generates the random motion of pixel automata. These "grow" detailed, colorful patterns across the computer screen in real time. Equipment courtesy of Systems Concepts, San Francisco.

Maps and geo-art by artist Trudy Myrrh Resner.
At intermission Myrrh will demonstrate geomorphology with play dough.
Bring copies of pictures or articles to share and to leave in what can become a collection of geosomatic ideas. Bring your questions, and challenge the speakers.
Program concept by Robin Semelkin, instructional designer. You may call her to discuss the topic and get information: (415) 321-4950.

Geosomatics is a Gaia project, 1990.

Upcoming Ylem Events

- Mar. 13, 8 pm — Forum, "Geosomatics"
- Apr. 8, 3-5 pm — Visit to studio of Marjorie Franklin
- Apr. 19, 8 pm — Lecture on Frank Lloyd Wright by Fred Saxe
- Apr. 20, 10:30 am — Tour Frank Lloyd Wright exhibit
- May 15, 8 pm — Forum

Ylem plans lecture, studio visit

Frank Lloyd Wright and the Future of Architecture, lecture by Fred Stott, architect and Secretary of The Ylem, Thurs. Apr. 19, 8 pm

Frank Lloyd invented radical new systems, thinking and problem-solving that created a whole new type of architecture. These systems made Wright the most innovative architectural technologist of his time. Most of his systems and inventions have not been understood or used by other architects or architectural schools, but some are following through and creating another new world of architecture. This lecture will describe Wright's primary inventions and systems of thought, and show some of his most adventurous young counterparts.

The Exploratorium, 3601 Lyon, S.F.



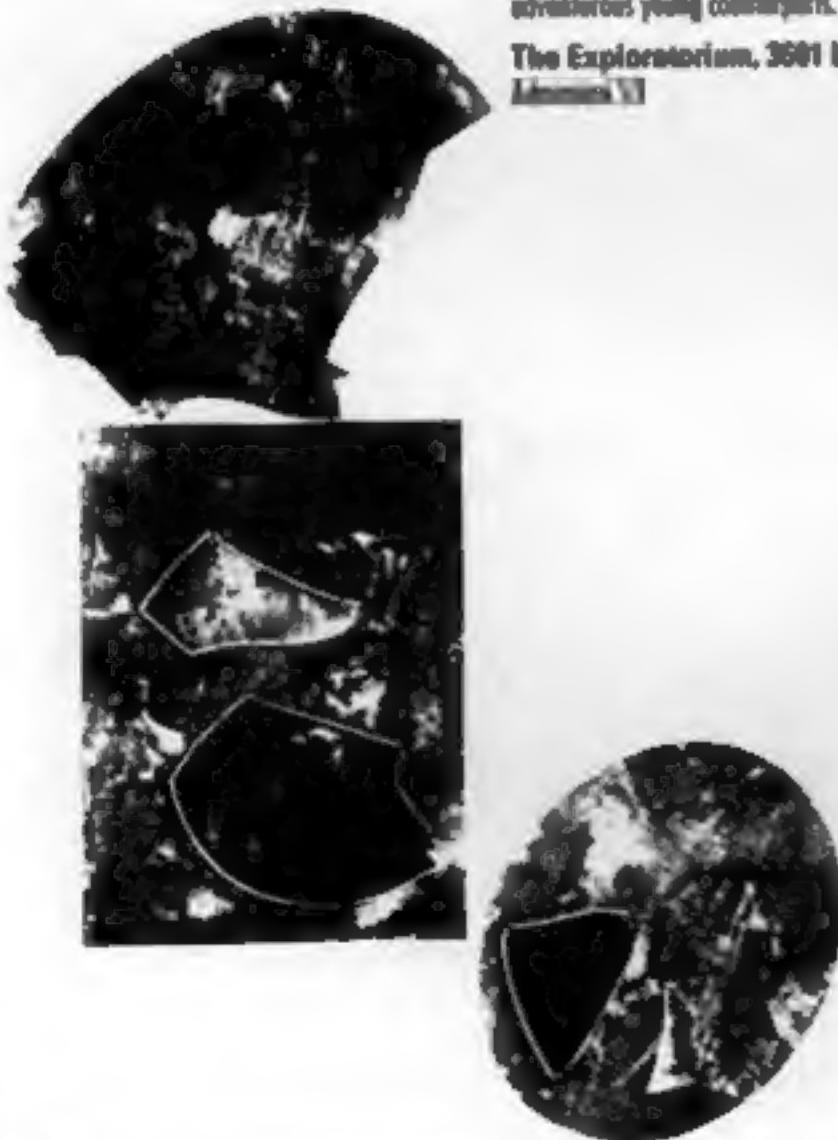
Visit to interactive sound and visual installation by Marjorie Franklin, Beverly Kaiser, and Hans Kaiser April 8, 3-5 pm

Life as a Slice: A metaphor for decision making based on information slices. An interactive installation that explores choice making, based on information slices.

When the participant signals a choice, a change occurs. The effect of the choice remains, but they are again offered more choices that stem from and augment the previous choice until the image is completed. The participant sees his/her image on the screen throughout the session. Meanwhile there will be a sampling keyboard providing sound choices. It has storytelling sound images such as footsteps on a floor. The player can spontaneously rearrange the sound images like building blocks to tell different stories. Does a different sequence tell a different story? How much of a story is dependent on the inferences of the participant rather than the sounds themselves? The above is accomplished with an Amiga computer, Deluxe Paint, a live digitizer, video camera, sampling keyboard, etc.

**4333 Holden, #54, Emeryville, CA.
Take I-80 to Powell St exit or take 580 to West St exit. Info:
415-462-2483 or
415-653-4582.**

"Passage," monotype by Patricia M. Terrell



Contaminación by Trudy Myrrh Reagan

In conversation with Laura Elenes, Professor of Design, University of Mexico.

In November 1988, Trudy Myrrh Reagan was the guest of Laura Elenes, Ylem's member in Mexico City, while she participated in an artist exchange program conducted by Sra. Elenes. This article condenses several days of conversation, and a lecture that accompanied Elenes' computer art exhibit, *Contaminación*, at the Mexico City Natural History Museum.

Contaminación is the Spanish word for pollution, but she also touches on the subject of cultural contamination here.

Although Mexico City is considered a hardship post for American diplomats because of the poor air quality, the visibility was pretty good as Laura Elenes drove me downtown. We could see tall buildings five miles away, but not the famous volcano through the brown air. Elenes said, "When I was young and was just returning here from Paris and other European cities in 1964, I said to myself, 'I live in one of the great cities of the world! Look at its parks, historical sites, its boulevards!' At that time the air was clear, and the boulevards were beautifully kept. It has been very sad to watch its decline over the last 20 years. The population, the dirt are completely out of control."

During this time it grew to eighteen million people. Yet, not being compressed upward like Manhattan or viciously defaced with graffiti, downtown Mexico City did not stink. It seemed merely dreary, degrees worse than Los Angeles. Her eyes saw more, anticipating the deterioration to come.

Her multimedia exhibit was composed

of elements that deliberately avoided exotic, high-end technology. Computer paintings suggesting skyscrapers were done on an Apple with a rudimentary paint program, and photographed off the computer screen. These were printed on clear acetate film and mounted on gold board for a handsome effect.

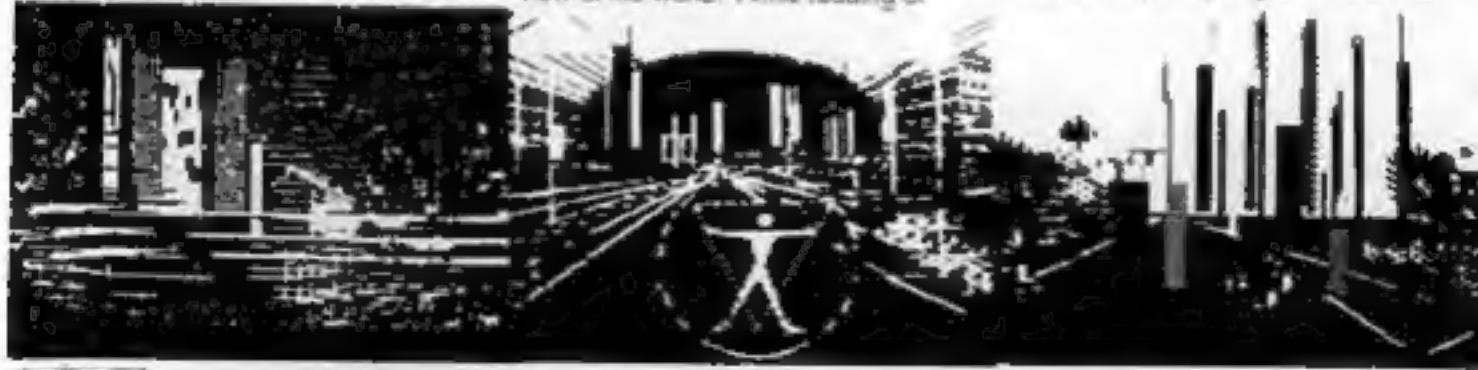
Looming over the exhibit was a large TV playing her works in a sequence that created an animation, accompanied by a vigorous musical composition appropriately titled *Metropolis* on cassette recorder. The progression of images carried a clear message. The present was represented by a series of man-made environments with darkened sky and rain of particulate matter. The next sequence containing a figure pushing outward against a geometric figure signaled that "we made this mess, but we can take control of it." Birds flew across the final images of clean, tree-lined boulevards.

In a lecture at the museum she explained the rationale for using a low-cost, low-resolution system when her position gives her access to better. She wants to demonstrate, she said, that machines that are readily available in their discount stores are creative tools. Well-to-do Mexican parents buy them for kids just to play games when they should be developing their imaginations and taking control of the technology. "High-tech images that bombard us from the TV and computer games are another form of contaminación," Elenes said. "They drown out the poetic instinct. The images are so complete, and come at us in such quantity that there is no time to assimilate them, to create one's own view of the world. While reading or

looking at a painting we are bringing the context of our own experience to it, interacting with the work, engaging in a creative act. My low-resolution images force me to rely on poetic devices like metaphor, and force others to decode the metaphors and to use images in their own memories to complete the thought. This is a creative act. Creativity is power, the very power we will need to overcome contaminación."

She mentioned another debilitating element in the hi-tech animation: it is an import. No reference is made to the fascinating culture of Mexico (which I found extremely rich and very different), no validation of local efforts. The synthesized images, so clean, so perfect, say "Try and match this!" A subtle attitude of "Why try?" creeps in, a lowering of self-esteem, of avoiding responsibility. "That we have too much of already."

What she sees as cultural imperialism is a more general problem, I think. Endowed with drawing talent that would have been useful in 1800, I was cowed by the powers of photography, so perfect, so believable. When I had small children I tried to counter the mindless media images pouring into the kids' heads with homemade scrapbooks. At a recent computer conference I asked makers of synthesized images if they saw any dangers in so many images that confuse us about whether they are real or not. Their consensus was that our environment is so media-mediated that no one knows anymore what's "real" anyhow. I left fuming, but you know what? They're right. ☐



Ylem Calendar

Events

Mar. 13 Ylem Forum: "Geometrics", See page 1

Mar. 15, 7 pm

Letterforms & Modes demonstration

Ylem member Scott Kim demonstrates his letterforms program at the BMUG meeting, Physical Sciences lecture hall, UC Berkeley

Mar. 16, 1:59 pm

π Potluck

Celebrate Einstein's birthday! Join Ylem member Larry Shaw in his periodic studio with the value of π. With your help, lots of π to eat. Bring a memorabilia. Exploratorium, 3601 Lyon St., S.F.

Mar. 16, 7:30 pm - preview

Mar. 17 - Apr. 8

"Alfred Stieglitz Loves O'Keeffe"

Multi-media theatrical production about two great artists. Old Town Theatre, 50 University, Los Gatos, CA 408-293-2110

Mar. 17 & 18, 2 pm

Wall of Water Ballet

Choreographer and filmmaker Jo Andres' dances are combined with filmed images projected onto unusual surfaces. Now she presents work-in-progress in the McBean Theater: a film screen that is a 9 X 12' sheet of water. Will she dance right into it? Exploratorium, 3601 Lyon, S.F. 415-561-0317

Mar. 18, 7:30 pm

Moskowitz Murals Public Dedication

Community muralist Mike Moskowitz has been commissioned by the Laguna Honda Hospital to create 8 panels on various aspects of music in San Francisco. Every body needs art! Laguna Honda Hospital, 7th Floor, 375 Laguna Honda Blvd., S.F. 415-881-5870

Mar. 30 - Apr. 1

Contemporary Arts Festival

A fine crafts show that includes Ylem member Carrie Adell's jewelry based on science images. Brooks Hall, Civic Center, S.F.

Apr. 8, 3-5 pm

Ylem studio visit: Marjorie Fradkin

New interactive artwork. See page 2 for details.

Apr. 26, 10:15 am

Ylem Tours the Frank Lloyd Wright Exhibit

After buying our \$6 tickets, we will meet at the exhibit hall door to join the docent-led tour of architect Frank Lloyd Wright's life work (Also see Exhibit). Info re. all tours: 415-499-3700. Marin Civic Center Exhibit Hall, Civic Center, San Rafael. Exit from Hwy. 101: "H. San Pedro St. — East"

Needs and Offerings

1990 Spring Computer Graphics Tutorial Workshops

① Basic Macintosh Graphics Techniques, Sunday afternoons, Mar. 4 - April 29 (skip 4/15), \$225

② Introduction to Macintosh Animation Methods from Hypercard to Video works/ Director, Mon. evens. 7-10 pm, Mar. 5 - May 7 (skip 3/19, 4/16), \$200

③ HyperCard and SuperCard Project Development, Wed. evens. 7-10 pm, \$200. [Ed. note: This is held in the Berkeley Hills in newly improved studio of Josephine Haveman, the graphic designer who in 1989 brought the Ylem Newsletter into the world of desktop publishing]. A/PX computer art center, PO Box 2913, Berkeley, CA 94708; info: 415-648-3770

The Film-makers Cooperative Catalog #7

This group rents experimental films, many of which will be of interest to viewers following technology in the arts. The "Coop" is one of the few sources for experimental animation, 1980s underground film, computer animation and non-narrative experimental films. \$52 pg. Video catalog avail. also. Film-makers Cooperative, 125 Lexington Ave., NY, NY 10016

"Cheer" at the Exploratorium

If you have seen/made/written/heard/thought/developed anything in relation to chaos, catastrophe, turbulence, fractals, strange attractors that would have relevance to the Exploratorium program, write the museum. Meetings are being held to explore possibilities, and you may be invited. Contact: L. Kolla, Exploratorium, 3601 Lyon, S.F., CA 94123

Electronic Art Issue, Leonardo

Copies available of supplemental issue published in conjunction with the First International Symposium on Electronic Art (ISEA), 1988, in the Netherlands. An all-star table of contents. \$30 from: ISAST, 1442A Walnut #75, Berkeley, CA 94708

Mandelbrot and Julia Sets video

Two hours of colorful motion through a mathematical landscape of fractals created at the Cornell Supercomputing Lab. Includes the popular "Nebulae and Zooms" (the Mandelbrot set), Julia set, Lorenz Attractor, 3D sequences. 1/2 VHS, \$50.

Documentation, \$5. Owners of "Zooms", inquire about big discount. Art Matrix, PO Box 180AJ, Ithaca, NY 14851; 24-hour phone: 1-800-729-3888

Aerial Press

Started in 1981 by mathematician Ralph Abraham, this is the first and best source for books, and software relating to chaos theory. Catalog lists *Fractoo*(that creates the prettiest fractal designs we've seen yet from a software disk, Full Color, Runs on IBM PC/XT/AT/PS2 compatibles, EGA or VGA monitor, DOS 2.0 or higher, 840 K and a hard disk 256, CA residents add \$3.70 sales tax). Aerial Press, PO Box 1360, Santa Cruz, CA 95061; 408-425-8818

Kaos, Inc.

An organization much like our own in Chicago dedicated to exploring links between art and science through individual projects. Their first, an exhibit called "Strange Attractors: The Spectacle of Chaos," earned them national attention. Future exhibits on other equally intriguing subjects are planned. Kevin Maginee, one of its directors, has just joined Ylem, and can be reached at: Kaos, 1440 N. Dayton St. #203, Chicago, IL 60622; 312-915-0882; FAX 312-915-0454

Art Calendar

A national calendar of competitions, jobs, internships, etc. \$28/yr. Well worth it. Clearly presented, with articles on the business of art. Art Calendar, PO Box 1040, Great Falls, VA 22066

Artists Need Temporary Residences

Artists around the world come to the Exploratorium in S.F. to do art. The museum seeks donated or inexpensive accommodations from time to time. Info: Gloria Gregg, Exploratorium, 415-561-0357

Earth Day, 1990

April 22. What on Earth will you be doing? Earth Day 1990 needs volunteers to help implement our global environmental agenda. Earth Day 1990, PO Box AA, Stanford, CA 94309; 415-321-1990

child touching it, whispering eyes

Calendar Items

Continue to send the Ylem Newsletter notices of your shows and activities. Who among you is participating in Pro Arts' East Bay "Open Studios" event? Ylem News, 967 Moreno, Palo Alto, CA 94303; 415-858-8590

rain in my mouth —
in the whipping wind
gasping —

Exhibits

Mar. 1 - Apr. 26

Opening reception Mar. 1, 6-9 pm

2nd reception Apr. 6, 6-9 pm

Kryptron (Portland, OR)

Kryptron is a team of computer artists in Zürich, Switzerland who create a loose integration of electronic realism and imagination. Ursula Ulrich, Swiss artist member of Kryptron, will be at the receptions. Abscis Gallery of Computer Art, 312 NW 10th, Portland, OR 97209.

Through Mar. 31

Blessed Oblivion (Los Angeles)

Group show of neon and electric art. MOA (Museum of Neon Art), 704 Traction Ave., CA, CA 90013; 213-817-1510.

Through Apr. 1

Capturing Light

150 years of photography. Includes good stereo section, with apparatus and explanatory demo. The Exploratorium, 3601 Lyon St., S.F.; 415-543-7337.

Apr. 4 - May 12

Lecture by artist, Apr. 17, 8:30 pm

Weavings by Sheila O'Hare (New York)

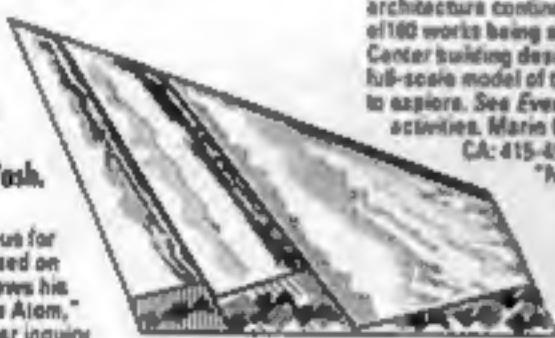
Witty wall-hangings in complex weaves, some calculated by computer. Center for Tapestry Arts, 187 Spring St., NY, NY; 212-431-2500.

Apr. 5 -

Aug. 25

Kenneth Snelson: The Nature of Structure (Wash. DC)

Snelson, famous for sculptures based on tensegrity, shows his "Portrait of the Atom," from his 30-year inquiry into how electrons behave around the nucleus, includes sculptures small and large, computer graphics and more. National Academy of Sciences, 2101 Constitution Ave. NW, Washington, DC.



Through Apr. 15, weekdays

Reception Apr. 6, 5:30-7:30

A Decade of Collaboratives (Santa Cruz)

This fifty-work retrospective by Ylem artist Lucia Grossberger shows her use of the computer as her "collaborator." Also on display: "Artemis," by Donna Van Dijk. County Offices, 701 Ocean St., 5th fl., Santa Cruz.

Through Apr. 18

Shee-Field

Intriguing installation piece by Ylem artist Sonya Rapoport explores the relation between raw data and "knowledge." It analyzes and displays graphically peoples' responses about their shoes. Also on view is Rapoport's collection of her own shoes with their accompanying analysis. On site is a computer with a program that tells you how you rate if you answer the shoe questions, giving you a "shoe-psychic reading." On view during business hours at Cadence Design Systems, 555 River Oaks Parkway, San Jose, CA.

Through Apr. 29

Holograms by William J. Wetzel, Jr.

An important retrospective by a holography pioneer. He invented one of the two means for making holograms that prove today's most footage. At Polaroid Corp. he conducted research on the world's most advanced imaging display techniques. He currently consults with the M.I.T. Media Lab. His personal artistic projects include a drawing in 3-D using software he wrote. Holes Gallery, 1702 Height St., S.F., CA 94117; 415-231-4717.

Through May 13

In the Realm of Ideas, Frank Lloyd Wright

The grand old man of American modern architecture continues to surprise us. Exhibit of 100 works being shown inside the Civic Center building designed by him features a full-scale model of the 1955 "Usonian House" to explore. See Events for special Ylem activities. Mario Civic Center, San Rafael, CA; 415-489-5848. Exit off Hwy 101 at "N. San Pedro Rd. — East."

Through May 13

Alexander: Retrospective Show (Santa Ana, CA)

60 works, incl. 20 holograms and holographic installations. Travelling show was also seen in Brazil and Chile, and will tour U.S. museums. Modern Museum of Art, Santa Ana, CA. Info: Alexander, 213-353-9946.

Through May 30

Space/Underwater (Chicago)

Holography and laser projection are used as a method of storytelling in a large installation by Ylem members Nancy Gorgone and Greg Cherry. Also at the museum is The Fine Arts Research and Holography Center that promotes education and research into holography as well as display. The Holography Museum, 1134 W. Washington Blvd., Chicago, IL 60607.

Opportunities

Deadline Mar. 17

Djerassi Foundation Artists In Residence

Wide range of visual media incl. New Genres. Site in Santa Cruz Mtns., openings 1-3 month residencies during 1991-2. Send resume, slides, or videos, proposal, 2 letters of recom. Sally Stillman, Djerassi Fdn., 2325 Bear Gulch Rd., Woodside, CA 94082; 415-851-0395.



Deadline Apr. 2

Computer Graphic Educators Grants

ACM SIGGRAPH offers 25 grants to computer graphics educators in beginning, updating, or strengthening computer graphics courses or programs. Grant includes full participation in SIGGRAPH '90 in Dallas Aug. 6-10. Info: Dr. Scott Owen, Mathematics and Computer Science, Georgia State University, Atlanta, GA 30303; 404-651-2247; matgeo@gsuvm.bitnet.

Deadline Apr. 5

Earthday 1990 Mail Art

Andrew Goldberg Gallery, San Jose, CA. Any mailable art (return with SASE). No fee. PROS: send SASE to Laura Langdon, 221 Hawthorne Ave. #6, Palo Alto, CA 94301.

Deadline Apr. 15

Expression/Oppression: Global Awareness

"As some curtains rise around the world, other curtains are drawn tighter. Global awareness in the age of mass media - in it expression or oppression you are experiencing?" 4 X 6 inches max., all media. No returns, no fee, documentation to all entrants. Send to Carrie Galbreath, Acad. of Art College, 625 Sutter St., San Francisco, CA 94102.

Deadline May 15

Prix Ars Electronica

Austrian computer arts contest, no fee. Art, animation, music, interactive art. Large cash prizes. PROS: Rachael Carpenter, U.S. rep., 82 Querencia, Novato, CA 94947; 415-892-8254. Deadline May 31.

Riddle of the Atom

by Kenneth Snelson

To me it has always seemed reasonable for an artist to try solving the riddle of the atom, how the electrons move and interact to carve out its space. It is a three-dimensional sculptural problem. Science declares itself to have abandoned that quest six decades ago with the advent of the uncertainty principle. The great physicist Max Born put it this way "... what lies within the limits [of the uncertainty principle] is knowable ... What lies beyond the dry tracts of metaphysics, we willingly leave to speculative philosophy." Aren't artists, perhaps, the last of the speculative philosophers as well as metaphysicians?

Science's decision, back in the 1920's, meant simply that humanity's efforts to deduce what an atom might "look like" if we were able to see one (a puzzle inherited from the Greek philosophers of twenty-five hundred years ago) was to be set aside forever. The whole issue, very hot in the 1920s and '30s, is now considered a dead one. As an artist who believes that all creatures and structures—everything—ought to be visualizable, I find the puzzle of picturing the atom irresistible.

I became interested in the subject in 1960 out of fascination with structures of all kinds. The model I've produced is an artist's model and it looks different from the familiar, statistical, charge cloud which many people find dissatisfying on questions of logic alone. Unlike many who say we should not expect the atom to make sense, I have faith in reason where structures are concerned and believe that the atom should make as much sense as any other assembly forces in the universe. After all, atoms—objects composed of forces—were here long before mathematical abstractions appeared.

My atom is an eclectic picture based on ideas that had been proposed before Heisenberg's principle succeeded in turning people away from such models. What I've done is to reconstruct the parts in a different order for I think that finally we are dealing with something like the fable of the blind men and the elephant. Incorporated in my atomic

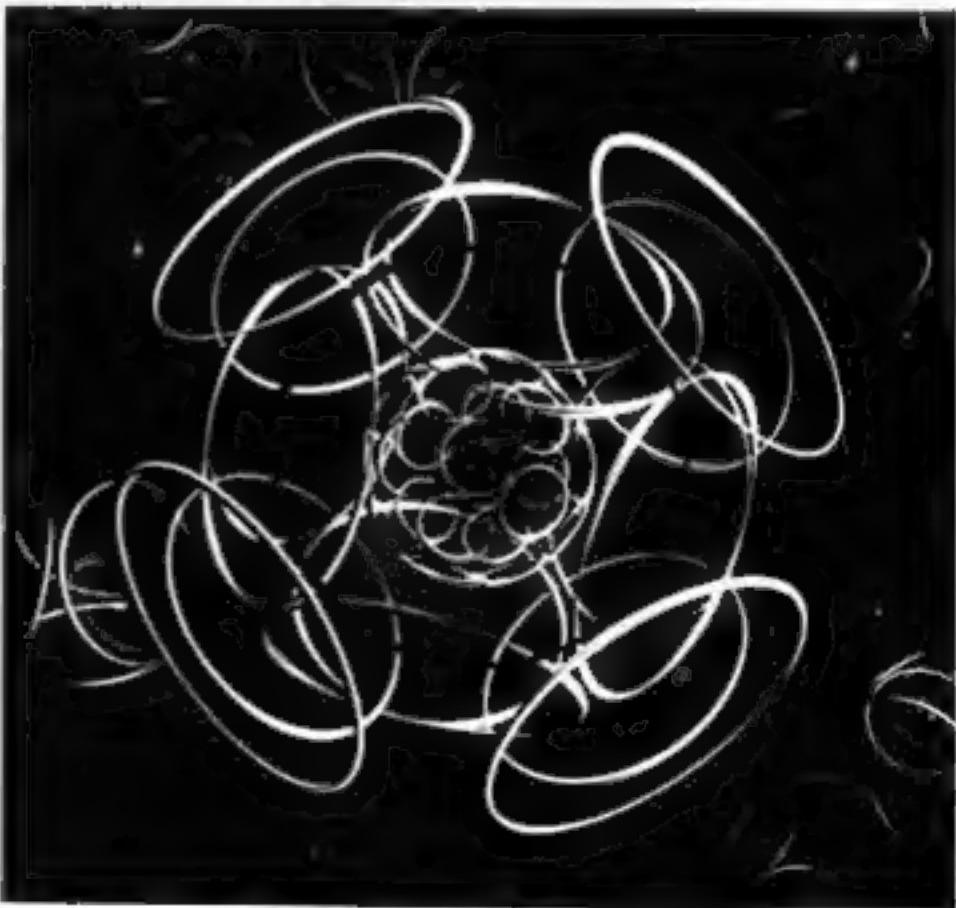
architecture is the familiar circular matter-wave orbit of the Niels Bohr-Louis de Broglie picture (1913-1923) which revealed the electron to have a "matter-wave" character and also required that it hold its flight path to a constant altitude as it moved around the nucleus—except when it was giving off or taking in energy. My picture modifies the Bohr-de Broglie image by allowing the electrons to maintain their orbits not only in equatorial great circle paths but in halo positions as well. This is where I run into most objections because people still consider the electron to perform like a tiny planet revolving around its nuclear "sun".

Another quality necessary in order for the atom to make sense: the de Broglie electron's matter-waves must be thought of as real and functional, not merely an abstraction. If matter-waves are real, then they ought to be endowed with the most elemental property of matter: solidity. In other words, the orbital path

of each electron would occupy space thereby keeping other matter waves out.

In my picture of an atom, the electrons do not ricochet randomly, but rather they serve to fill up the atom's space. Each shell is a sphere of structural symmetry. When a pattern is filled, like individual tiles completing a mosaic, the next electron begins another shell, and so on.

For the past 3 years I've been using a Silicon Graphics computer with Wavefront software to create images for this long-running, open-ended, art work which I call "Portrait of an Atom". In some future time, if we ever are able to see the atom's electrons performing their unique choreography, that is, if science discovers an unexpected end-run around the limitations of the uncertainty principle, I'm convinced that we'll get a view of atoms much like those in my computer pictures.



"Portrait of an Atom" - Second Series

Book Reviews

An exhibition, Kenneth Snelson, *The Nature of Structure*, which travelled from the New York Academy of Sciences to the California Museum of Science and Industry last year, will open this year on April 5th at the National Academy of Sciences in Washington D.C. The show has models in various media as well as drawings, photographs, sculptures and computer pictures.

A 60-page Catalog complete with text and pictures is available for \$12 (incl. postage and handling).

Address all mail to **Kenneth Snelson, 140 Sullivan St., N.Y., N.Y. 10012**

Also, on June 8, 1980 (see local listings) there will be a Smithsonian World tv program titled *Quantum Universe* in which I have a few moments to talk about my atom and show computer pictures.

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Motion Matters: Kinetic Art, by Jim Jenkins and Dave Quick, Gibbs Smith, 1980 (paper \$14.95)

Lawrence M. Gertel: A Cybernetic Renaissance, Gibbs Smith, 1980 (paper \$14.95)

Peregrine Smith Books (PO Box 667 Layton, Utah 84041) has recently published these books as part of their "The Future is Now" Series.

Motion Motion documents recent kinetic art works with 75 photographs (55 in color). This book proves that kinetic art is alive and well, albeit a bit more eccentric than the heady days of the 1960s. The book takes the position that the "movement" is now more concerned with content and human response than with simply showing off new technology — the downfall of the movement in the 1960's.

Lawrence M. Gertel's high energy, somewhat whimsical, images are produced using video effects, color computer graphics and Macintosh graphics. Although the intense colors in this catalog begin to fatigue the eye, the individual images are, as Nam June Paik states, "fresh, electric, running against the grain of commercial art."

Both books are 64 pages long and their large format (10x14) allows room for large, detailed photographs. These books are welcome additions to the growing art-and-technology literature.
—Reviewed by Chris Yewell

Symmetry 2: Unifying Human Understanding, Edited by Istvan Hargittai, Pergamon Press, Oxford, England, 1980. 1072 pp., illus. \$110

The editor of this giant opus, chemist Istvan Hargittai, has accomplished an amazing task. He has found authors with new things to say about symmetry.

Volume 2 covers much of the same ground as the first volume (published in 1980), but manages to extend the

discussion to new areas (robotics, economics, medical sciences) and deepen understanding in other areas (crystallography, art, physics). The 2 volumes now contain the work of scientists and artists from 23 countries.

The study of symmetry has for some time been seen as an interdisciplinary tool that applies to art, music, science, and mathematics, but only fairly recently has it been connected to the world of physics.

The pivotal role of symmetry in modern physics can be traced to Albert Einstein and his 1905 paper introducing special relativity. Before then physics laws were more often framed in terms of conservation laws.

In the contemporary arts strict symmetries are normally viewed as devices for the decorative arts which need to be avoided or utilized in such a way as to avoid being seen as perceptually superficial. The authors in this book clearly demonstrate that symmetry coming from the sciences and mathematics can be used quite profitably in the arts and possibly even play some sort of role in the social sciences (see B. P. Fabriani's article about gambling, the stock market, consumer markets and the role of government in symmetric markets).

I can recommend this new volume to all those interested in interdisciplinary approaches to knowledge and those interested solely in computer graphics, particle physics or topology. The closing article by Istvan Hargittai entitled "The Joy of Symmetry" gives us a glimpse of where Dr. Hargittai is headed — providing us with companions to the "The Joy of Cooking." In the meantime Dr. Hargittai is editing a new journal entitled "Symmetry," of course. He can be reached at the Hungarian Academy of Sciences, Eotvos University, Budapest VIII, Puskin utca 11-13, PO Box 117, H-1014, Hungary.

—Reviewed by Roger Molina, executive editor, Leonardo

comes in one riding
the pony training
series

Please send a
membership application
and sample newsletter to
(me) (my friends) at:

NAME _____

ADDRESS _____

CITY _____

Membership is \$25 per year. Students
\$15. Send to Ylem, PO Box 749,
Orinda, CA 94563.

Getting
Ahead
in
Technology
Frankie
Fields



This is your newsletter !!!

Please continue to send notices of events, needs, opportunities, exhibitions and talks, and art on a Mac disk or that will reproduce well by high copy machine. Written material accompanying artwork on same subject is welcome. Deadline: 20th of each month.

Ylem Newsletter
947 Moraga
Palo Alto, CA 94303 (415) 856-4593

MAILING LABELS OF
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are available to Ylem
members for \$20. Info:
Fred Sotl, (415) 254-0639.

Get your copy of the YLEM
VIDEO. Features 26 artists.
1/2" format \$24., members
\$12. Mark Briggs, 3601 Kelso
Cl., San Jose, CA 95127

YLEM

Artists Using Science and Technology
P.O. Box 749, Orinda, CA 94563

Ylem: Artists Using Science and Technology is a non-profit organization.

President - Beverly Reiser

Vice-President - Trudy Mynth Reagan

Secretary - Fred Sotl

Membership development - Eleanor Kent

Newsletter - Russell Reagan, Trudy Mynth Reagan

April
Newsletter

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